

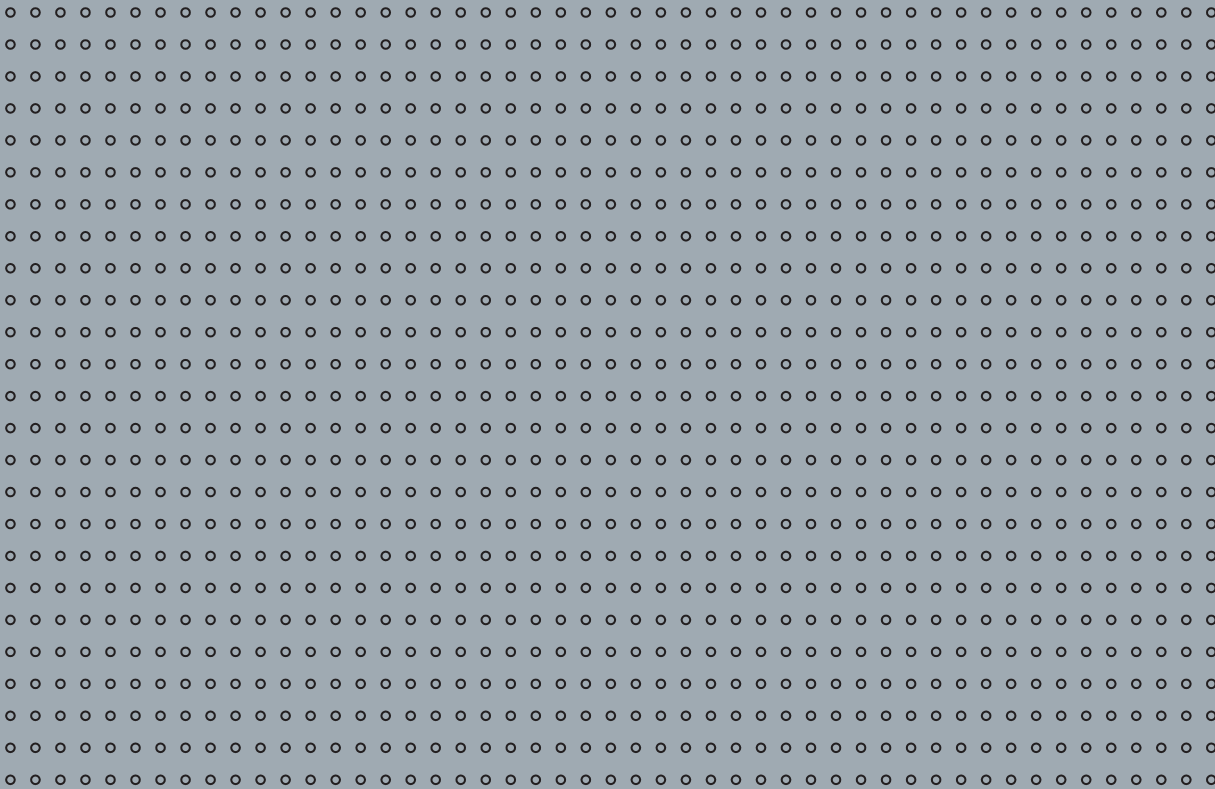


Master the Elements

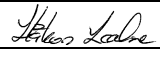
Installation Manual

Simrad CS68
ECDIS

English



About this document

Rev	Date	Written by	Checked by	Approved by
A	070105			
	First issue.			
B	301105			
	New software release (1.2.xx.) with minor changes in System Configuration dialog. Cabling diagram updated.			
C	050906			
	New software release (2.1.xx.) implementing the IMO S-52 requirements (C-MAP SDK 3.6). Minor changes to MMI.			
D	191007			
	New sw 2.2.00 with new displays added, MO19FE, MO19CE, MO19BE			
E	160909	NG	JGV	THE
	New software release (3.1.) adapted to new 19" ECDIS monitors and new MC50 MKII. Minor update to illustrations			

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1 INSTALLATION

This section holds descriptions for unpacking and handling the equipment and for mechanical and electrical installation of all units in the CS68 system.

1.1 General

A CS68 system may be used as a main chart system or as a back-up in an ECDIS system.

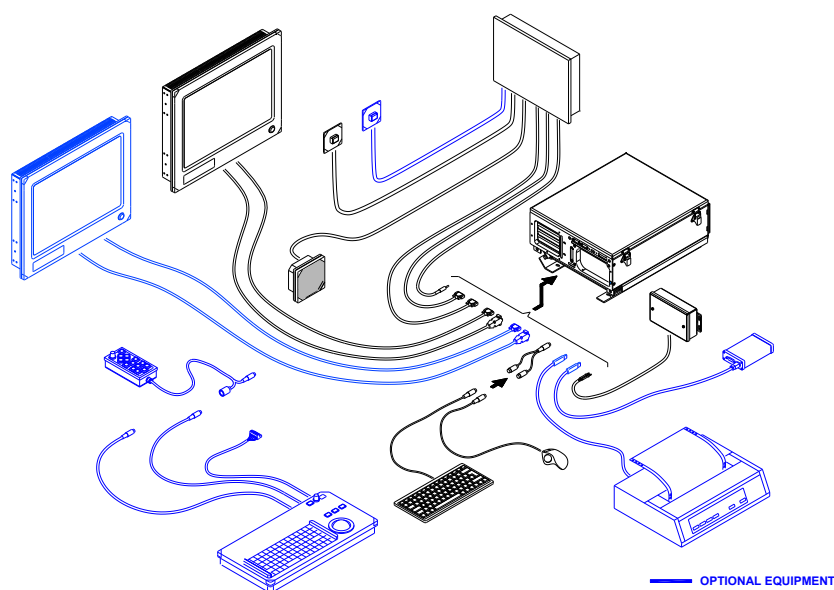
1.2 System components

A CS68 system includes the following units:

- MC50 MKII Marine computer
- ECDIS approved color monitor (may be delivered by others)
- FB200 Filterbox
- Chart Interface unit
- Cherry keyboard
- Logitech TrackMan® wheel
- Splitter cable for TrackMan wheel and keyboard
- Loudspeaker
- Alarm Reset unit

The basic system may be expanded with a second monitor, a COP20/30 Operator panel, a COP10 remote operator panel, a Radar Processor unit and with a printer.

If no COP20/30 is included in the system, an optional switch may be installed to turn the system ON/OFF.



1.3 Unpacking and handling

Care should be taken when unpacking and handling the equipment. A visual inspection should be made to see that the equipment has not been damaged during shipment and that all components and parts are present.

1.4 Location of the units

The units included in the CS68 system should be mounted with special regard to the units' environmental protection, temperature range and cable length.

The CS68 units are designed to operate within the temperature range of 0°C to +55°C. However, it is recommended that adequate ventilation/air-conditioning is provided in order to keep the ambient operating temperature at +20°C.

It is also recommended that the area around the units is kept relatively free from dust and build-up static electricity.

1.5 Mechanical installation

Note *Installing devices are not included with the units.*

MC50 Computer

The MC50 has to be mounted horizontally, and should not be installed close to heavy transformers or similar.

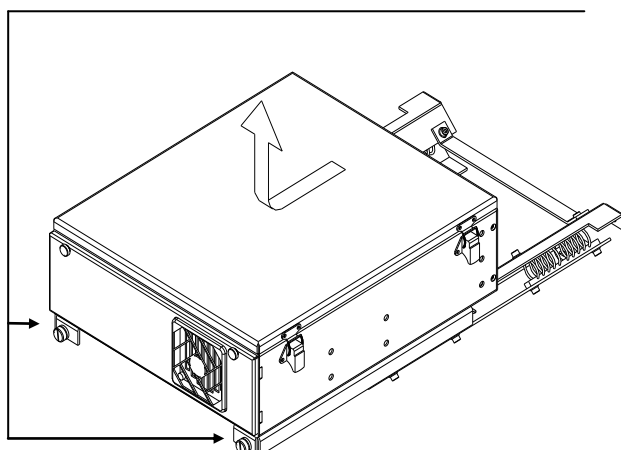
Other equipment should not be stored upon the MC50 unit.

The unit should be mounted as close as possible to the FB200 Filter box as the cable length between FB200 and MC50 is limited to 0.45 m.

The mounting location should allow access to the power button, the DVD and the floppy drive. It is also necessary to have working area when replacing the air inlet fans' dust filter.

Refer dimensional drawing showing recommended working area, page 67 onwards.

Use the following procedure when mounting the unit:



- 1 Loosen the 2 screws on the front of the unit, slide the computer cabinet 1-2 cm aside, and lift the cabinet upwards to release it from the mounting bracket.
- 2 Prepare 6 holes in the deck where the mounting bracket is to be located. Refer dimensional drawing, page 69.
- 3 Secure the mounting plate to the deck with 6 bolts.
- 4 Reinstall the computer cabinet to the mounting plate.

Monitor

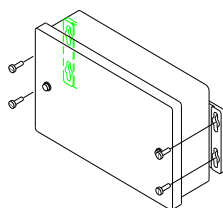
One or two Hatteland Display series 1 Redesign 19", 20.1", 23" and 27" monitor must be part of the ECDIS system. The monitors must have equal size.

A separate Instruction manual is delivered with the monitor. This manual includes installation procedures as well as dimensional drawings.



The monitor must be validated to matrox P690 display adapter to be ECDIS approved!

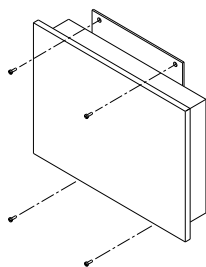
FB200 Filterbox



The FB200 is preferred to be mounted vertically, and should not be installed close to heavy transformers or similar.

FB200 is secured to the bulkhead with four screws. Refer dimensional drawing on page 72.

Chart Interface unit

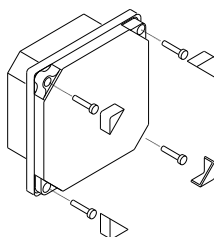


The Chart Interface unit is preferred to be mounted vertically.

Make sure that the mounting location for the unit allows for cable entry. Refer dimensional drawing on page 73.

The Chart Interface unit is secured to the bulkhead with four screws.

Loudspeaker



The speaker included in the CS68 system is design for panel mounting. A mounting kit including screws and front panel corners is included with the speaker.

- 1 Drill the mounting holes and make a panel cut-out according to dimensional drawing, page 71.
- 2 Use the supplied screws to fasten the speaker to the panel.
- 3 Apply the front panel corners.

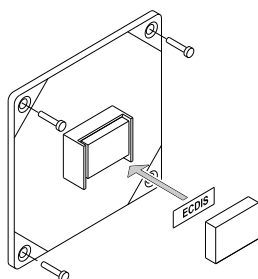
Alarm reset unit

The Alarm Reset unit is used in different chart systems, and it is therefore delivered with different text stickers to match the system.

Note

*If the Alarm Reset unit is used in an **ECDIS** system, the **ECDIS** sticker should be used. If used in an **ECDIS back-up** system, the **CS68** sticker is to be used.*

Use the following procedure when mounting the Alarm reset unit:



- 1 Fix the **ECDIS** or the **CS68** sticker to the button. Refer *Note* above.
- 2 Attach the lid to the button, and press firmly.
- 3 Drill the mounting holes according to the dimensional drawing or drilling template on page 74 and page 81.
- 4 Fasten the Alarm Reset unit to the panel with the supplied mounting screws.

Cherry keyboard and TrackMan® wheel

The Cherry keyboard and the TrackMan wheel may be fixed to the desk by using the included Velcro fasteners.

Note

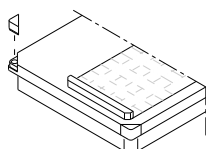
To fulfill the ECDIS regulations, the Cherry keyboard and the TrackMan wheel must be mounted in an illuminated location!

COP20/COP30 Operator panel (Option)

COP20/30 should be located where it is most convenient for the user, with special regard to the user's need for easy operation. Refer standard and optional cable length for cables between operating panels and MC50 unit, page 49.

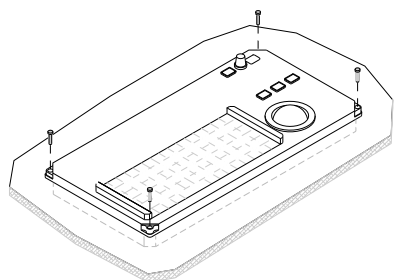
It is recommended that adequate ventilation/air-conditioning is provided in order to keep the ambient operating temperature at +20°C.

Use the following procedure when installing the COP20/30:



- 1 Cut a hole where COP20/30 is to be fitted. Refer dimensional drawing on page 76, and the cut-out template on page 85.

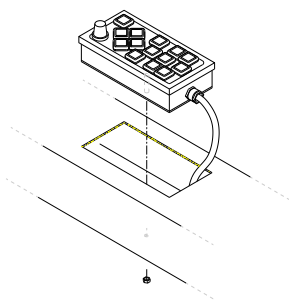
- 2 Lift the four removable corners from the panel.



- 3 Locate COP20/30 in the hole, and secure the unit to the panel with four 4mm screws.
- 4 Reposition the removable corners on the panel.

COP10 Remote Operator panel (Option)

COP10 is designed to be mounted in the helmsman chair's armrest.



- 1 Cut the necessary holes in the armrest where COP10 is to be fitted. Refer COP10 dimensional drawing on page 75, and the cut-out template on page 79.
- 2 Secure the unit to the panel with the nut as shown on the figure.

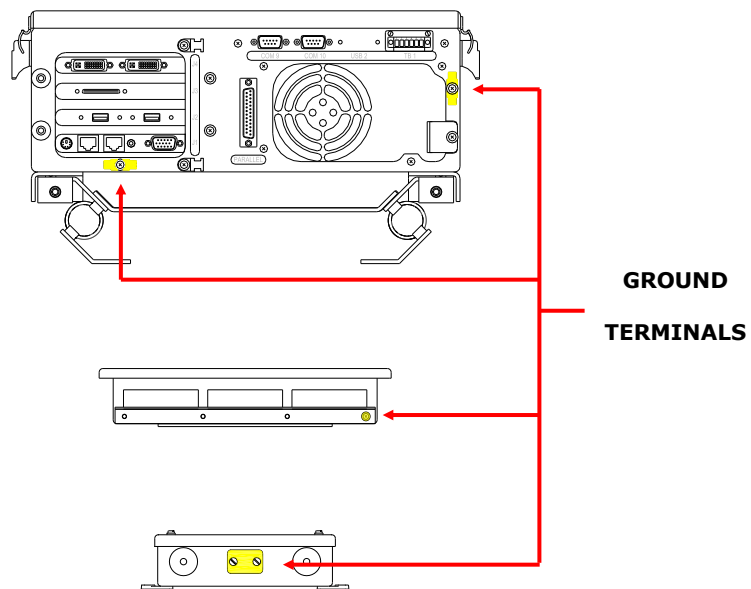
External ON/OFF switch (Option)

The optional External ON/OFF switch is secured to the panel with four screws.

Refer dimensional drawing and drilling template on page 74 and page 83.

1.6 Grounding the units

The computer, Chart interface unit and FB200 should have a proper ground connection from the units' ground terminal. The wires should be as short as possible and have a cross section of at least 16mm² (gauge).

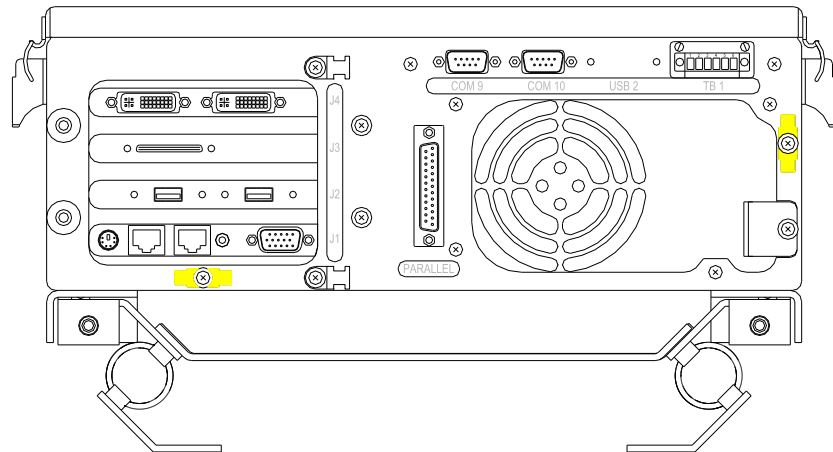


1.7 MC50 MKII computer's terminal layout



The illustration below shows the MC50 unit's back side.

The terminal layout on your MC50 unit may differ from the illustration, and more/less terminals may be available!



1.8 Power connection

Main power supply

CS68 system is supplied with 24V DC. The power has to be connected via the FB200 Filter box.

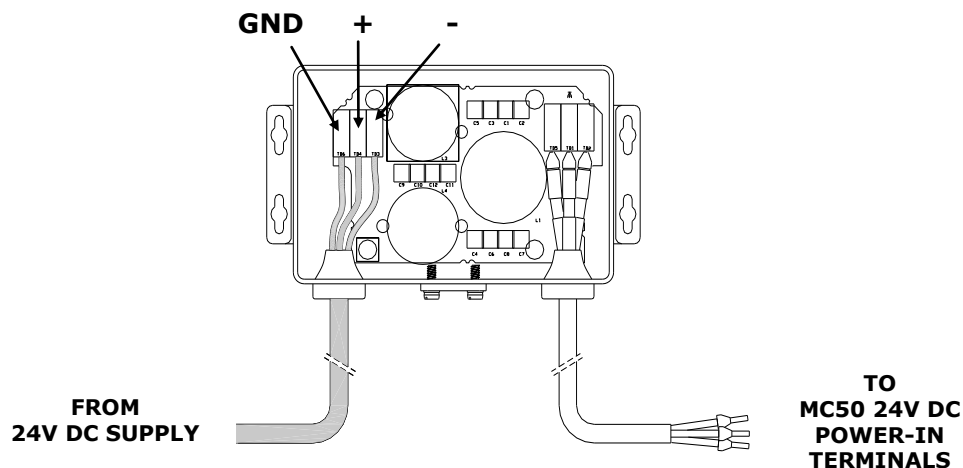
Caution

Do not connect 24V DC to the CS68 system without using FB200 filter box. Doing so may cause electromagnetic interference!

- 1 Remove the cover on the FB200, and connect the cable from 24V DC supply according to the labelling on the terminals as shown on the figure below.

Note

This cable is not supplied with the equipment! It should have a cross section of at least 2.5mm² (gauge).



- 2 Connect the cable from FB200 to the 24V DC power-in jack on the MC50 computer.
- 3 Secure the cable to the fixing bracket to avoid that vibration should cause the plug to loose connection.

Alarm supply

24V alarm supply from the vessel's alarm supply has to be connected to TB9 in the Chart Interface unit. This alarm supply is used to activate an alarm if the main power supply to the CS system is lost.

1.9 MC50/Chart Interface unit cable connections

Connections between the MC50 computer and the Chart Interface unit are made by three cables. The cables are pre-made from factory.

For cables lengths, refer *Cabling* section, page 49.

Refer also to *CS68 Cabling diagram*, page 77.

1.10 Connecting keyboard, mouse and speaker

Cherry keyboard and TrackMan Wheel are connected to the MC50 computer. The speaker is connected to the Chart Interface unit.

Note

Cherry keyboard and TrackMan Wheel has to be connected via the splitter cable.

Refer **CS68 Cabling diagram**, page 77.

1.11 Using the USB connection

If any equipment is connected to the USB port, the cable must be equipped with one of the supplied ferrite beds (KG USB-4).

1.12 Connecting the monitor(s)

If two monitors are used they can be used in Clone or Dual mode.

In Clone mode both monitors display the same image.

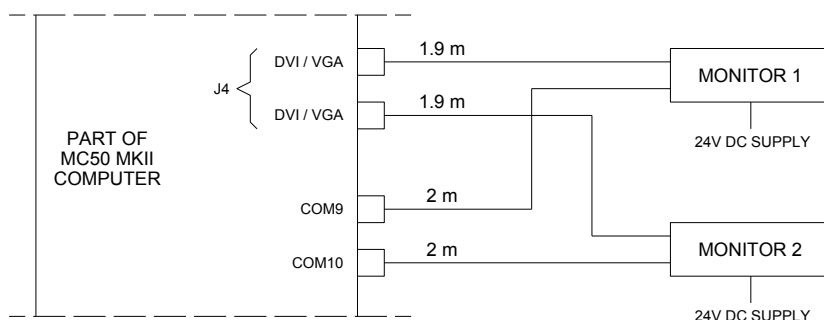
In Dual mode the second monitor gives the operator an additional workspace for route planning and head up display while normal system operation is maintained on the primary display.

It has to be decided during installation of the system if the second monitor should be used in Clone mode or Dual mode.

Cabling

It is possible to connect 2 monitors to a CS68 ECDIS and 4 monitors to a PLECDISTM system. A DVI cable is connected to the DVI port (J4) on MC50 MKII.

A 9-pin serial cable must be connected between COM 9 or COM 10 on MC50 MKII and the monitor(s).



If longer cable lengths are required, a high quality VGA cable must be used together with the supplied DVI/VGA converters.

Note

Do not use the VGA output on J1 on the rear of MC50 MKII. According to Simrad CS68 ECDIS certificate only DVI ports on J4(can be used to connect one or two ECDIS compliant Hatteland series 1 RD monitors.

Display configuration

The system is pre-configured to use 2 JH 19T14 MMD, and to use these in Clone mode.

The following monitors from Hatteland Display are supported:

- JH19T14 MMD (1280*1024 – 60 Hz)
- JH20T17 MMD (1600*1200 – 60 Hz)
- JH23T12 MMD (1600*1200 – 60 Hz)
- JH27T11 MMD (1920*1200 – 60 Hz)

To configure these alternative monitors and change from Clone to Dual mode the additional ECDIS Admin tool must be used. This sw must be downloaded from Simrad's support site (<http://www.simrad-yachting.com/en/Support/>).



The support site is authorized for OEM, dealers and distributors. A password is required to get access to this web site.

The selected COM port(s) need to be defined in the System Configuration dialog to make sure that automatically backlight adjustment are done according to ECDIS regulations.

Refer ***Output configuration***, page 37.

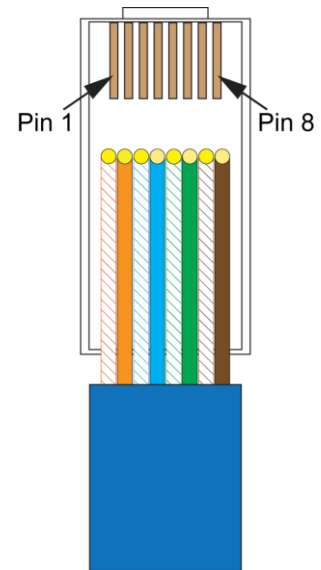
1.13 Connecting the system to Internet

The CS68 system can be connected to Internet to utilize online chart update.

The system is connected by using a shielded Ethernet cable.

NOTE:

Pin 1 and 3 or pin 2 and 6 must be broken!



To fulfill the ECDIS requirements the system must be connected via a switch that electrically separates the ECDIS from the Internet!

The Ethernet cable must be equipped with one of the supplied ferrite beds (SFC-10).

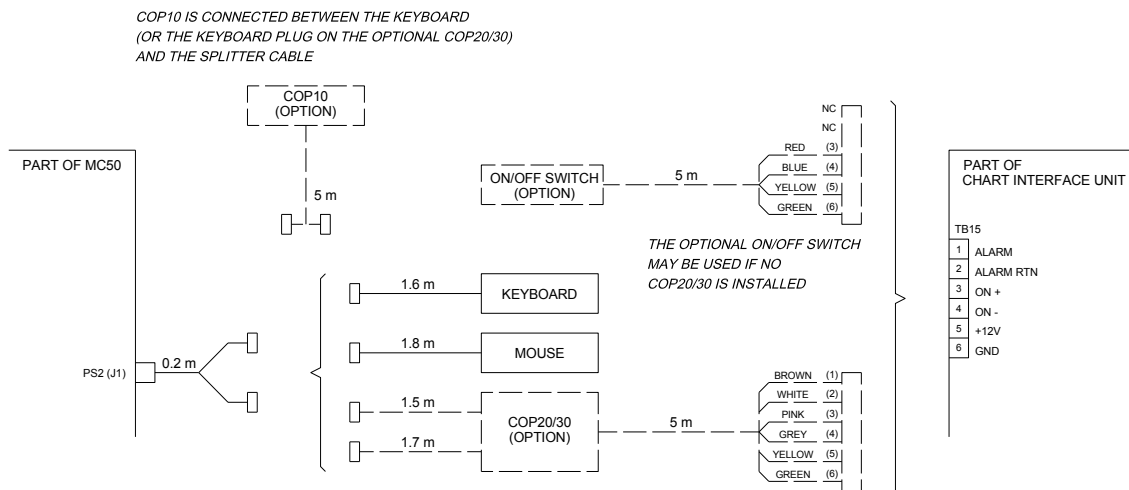
1.14 Connecting optional equipment

If a COP20 or COP30 is to replace the Cherry keyboard and the TrackMan Wheel, the keyboard and mouse cable on COP20/30 are connected to the computer's PS2 port by using the splitter cable.

COP20/30's signal cable is connected to TB15 in the Chart Interface unit.

If an optional COP10 is to be used in the chart system, this unit is connected between the keyboard (or the keyboard plug on COP20/30) and the splitter cable as shown on the figure below.

If no COP20/30 is installed, an optional ON/OFF switch may be connected to TB15 in the Chart Interface unit.



Standard cable length for all optional units are shown on page 49.

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2 CONNECTING EXTERNAL EQUIPMENT

This section described how external equipment is connected to the CS68 system.

2.1 General

All external equipment is connected to the CS68 system via the Computer Interface board in the Chart Interface unit. Component layout showing terminals, strap location and diodes on this board is shown on page 78.

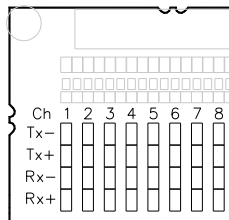
Connect the signal cabling from the external equipment as per the manufacturer's specification and according to the description in the following pages.

2.2 Serial I/O ports (TB1 – TB8)

Signal description

PIN NO.	SIGNAL NAME	COMMENTS
1	RX +	NMEA channels 1 to 8
2	RX -	
3	TX +	
4	TX -	
5	GND	

LED indication



Four LEDs for each of the eight I/O channels are indicating signals passing the channels by steady, interrupting or flashing lights as shown in the table below:

LED	LED STATUS	COMMENTS
Tx-	Interrupting	Transmitting data
	Steady	No data transmitted
Tx+	Flashing	Transmitting data
	Off	No data transmitted
Rx-	Interrupting	Receiving data
	Steady	No data received
Rx+	Flashing	Receiving data
	Off	No data received

2.3 Digital Input ports (TB10)

Signal description

PIN NO.	SIGNAL NAME	COMMENTS
1	In +	Digital input 1 Shortcut 0,5 sec. to silence all alarms
2	In -	
3	In +	Digital input 2 (Spare)
4	In -	
5	In +	Digital input 3 (Spare)
6	In -	

LED indication

There are no LEDs for the Digital Input ports.

2.4 Digital Output ports (TB11)

Signal description

PIN NO.	SIGNAL NAME	COMMENTS
1	Out +	Digital Output 1 System Failure Signal high: Standard mode Signal low: System failure (ECDIS shut down)
2	Out -	
3	Out +	Digital Output 2 Alarm sound control Signal low: No audible alarm/or alarm muted Signal high: Audible alarm present
4	Out -	
5	Out +	Digital Output 3 Alarm present on ECDIS Signal low: No alarm present Signal high: Alarm present Acknowledge of alarms does not change the signal.
6	Out -	

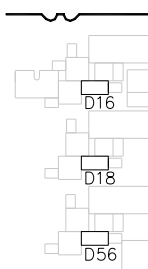
Strap settings for inverting signals

The digital output is 24V, determined by the strap settings on S1 – S3 as shown in the table below:

	DIGITAL OUTPUT 1	DIGITAL OUTPUT 2	DIGITAL OUTPUT 3
Normally open	1 2 3  S1	1 2 3  S2	1 2 3  S3
Normally closed (Factory default)	1 2 3  S1	1 2 3  S2	1 2 3  S3

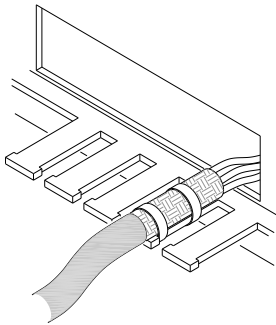
LED Indication

D16, D18 and D56 are used to indicate active relay on digital output ports as indicated in the table below.



LED	LED STATUS	COMMENT
D16 (Output 1)	ON	Relay active
D18 (Output 2)		
D56 (Output 3)		

2.5 Grounding external cables

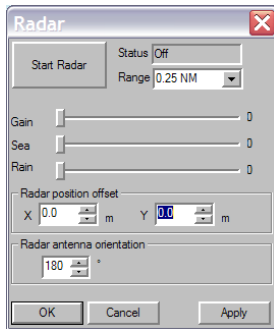


Each cable screen should be properly terminated to the Chart Interface unit's grounding bar as follows:

- 1** Strip the cable's insulation and pull the screen backward to cover the insulation.
- 2** Fix the cable screen to the grounding bar by a wire strap. Tighten well to make sure the screen has good contact.

2.6 Connection of Radar processor unit

The Radar Processor unit is connected by the USB cable to a spare USB connector on the MC50 Mk2. For connection to the vessel radar system, refer to separate manual.



If the radar video is not referenced to CCRP, the offset should be set in the Radar position offset field in the Radar menu (Tools/Radar).

3 SOFTWARE CONFIGURATION

This section describes how to configure the CS68 software.

3.1 The System configuration dialog

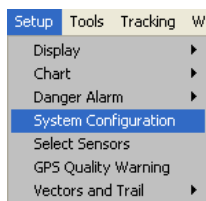
All configuration of the CS68 system is done from the **System Configuration** dialog. This dialog is the entrance to all settings that have to be done when configuring the system.

Note

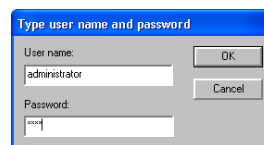
The following pages list the settings as they appear in the dialogs. All these settings have to be performed before the CS system is ready for operation.

To avoid unintended alteration of system parameters, the **System Configuration** dialog is password protected.

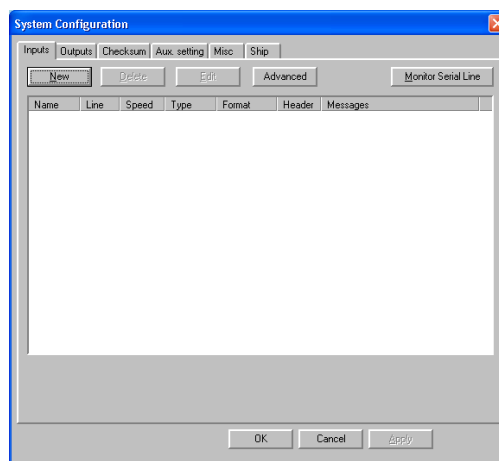
Use the following procedure to open the **System Configuration** dialog:



- 1 Press the **Setup** menu, followed by the **System Configuration** command.
 - A dialog will request a password before it is possible to enter the system configuration.



- 2 Type “1234” in the **Password** field, and confirm the entry with the **OK** button.
 - The **Input** tab in the **System Configuration** dialog will now be displayed.



Note

*Data entered in the **System Configuration** dialog are not taken into account until it is confirmed by clicking the **OK** or **APPLY** buttons:*

- **OK:** changes are applied, and the dialog box is removed from the display
- **APPLY:** changes are applied, and the dialog box remains displayed.

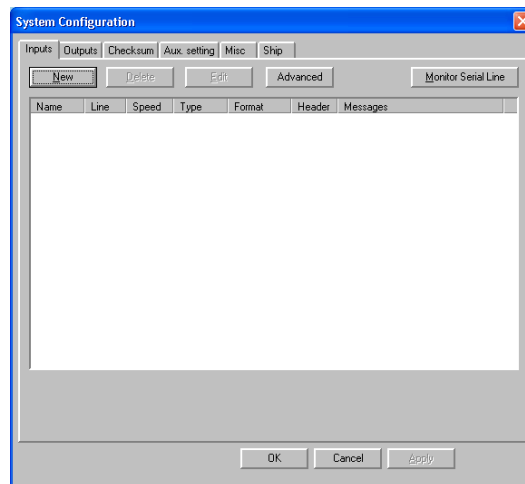
The different tabs in the **System Configuration** dialog are described in the following pages.

		Ref page:
Inputs:	Used to configure external devices.	32
Outputs:	Used for configuring the output format.	37
Checksum:	Used for checksum test for received data.	38
Aux settings:	Used for different hardware and software settings.	39
Misc:	Used for different operator parameters.	40
Ship:	Used for defining the ship size.	42

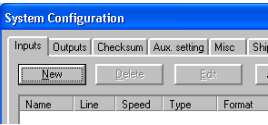
3.2 Input configuration

The **Inputs** tab in the **System Configuration** dialog is used for configuring the input format for each interfacing serial channel. The tab is also used to delete or edit an already defined input.

All defined input devices are listed alphabetically in the **Input** tab. If no input device is configured, the dialog will be empty.

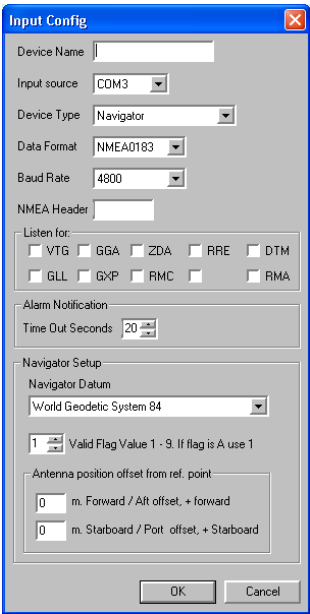


Adding new device



New devices are configured by pressing the **New** button when the **Inputs** tab in the **System Configuration** dialog is active.

The **Input Config** dialog is displayed.



Note

*Which data that is available in the **Input Config** dialog depends on which device type that is selected.*

The **Input Config** dialog has the following fields:

Device Name	Name for the input device. The device name is limited to 8 characters. The entered name will be displayed in the different user menus and will also be used in an alarm text.
Input Source	Com. port used for the device.
Device Type	Drop down field with available device types.
Data Format	NMEA format and Baud Rate for the device. Available alternatives are dependant on selected device type.
Baud Rate	
NMEA Header	NMEA header for the device. This header must be specified if multiple talkers with identical telegram type (e.g. GLL) are connected.
Listen for	Selectable sentences for the device. Available sentences may be displayed by pressing the Monitor Serial line button. Refer page 36. The following sentences is preferred for GPS: GGA, VTG, ZDA and DTM
Time Out in Seconds	Time-out limit for the data. If the data stops and is not received within the specified time-out limit, an alarm will be activated.

Note

If data-transmitting rate is low, e.g. ARPA or some echo sounders, a short time-out may block the data.

Navigator Datum	Specification for differential GPS. Must be entered if Navigator or AIS is selected as device type.
Valid flag	
Antenna position offset from ref. point	Values for antenna offset for Navigator and AIS devices.

All sensors refer to the vessel's reference point. This point is defined in *Ship settings*, page 42. If no reference is defined, the vessel's center of gravity will be used as reference point.

If the antennas are mounted out of the reference point, the offset x and y values for the antenna position must be entered into the system to give the correct ship position.

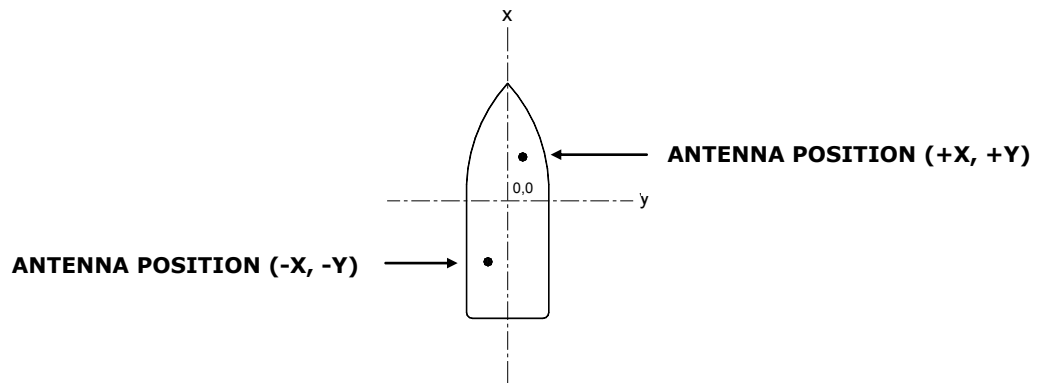


If two equal navigators (GPS) with antennas are installed as indicated on the figure below, and if correct antenna offset is entered, there should be no position difference between them. The ship will obtain the same position in the chart even if the sensors are exchanged!

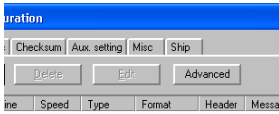


If an ARPA/MARPA is connected to the CS system in order to receive ARPA targets, the targets have to be correctly referenced to the CCRP (no internal offset required).

The position for a GPS is the position of the antenna. The position is given as an x and y offset relative to the vessel center, with positive value forward and to starboard.



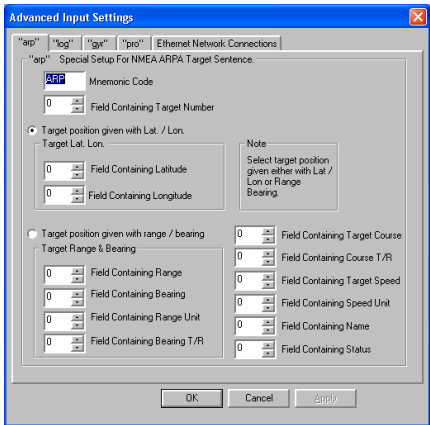
Advanced input settings



By pressing the **Advanced** button when the **Inputs** tab in the **System Configuration** dialog is active, the **Advanced Input Settings** dialog is displayed.

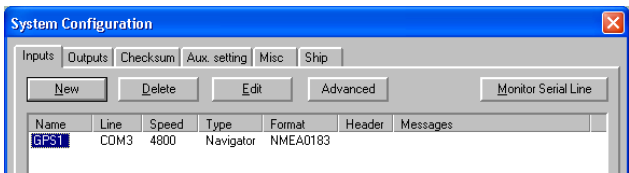
This dialog is used for advanced settings for ARPA, log, gyro, position reference sentences and Ethernet connection.

All tabs in this dialog have text specifying the different data fields as shown in the “arp” tab shown below.



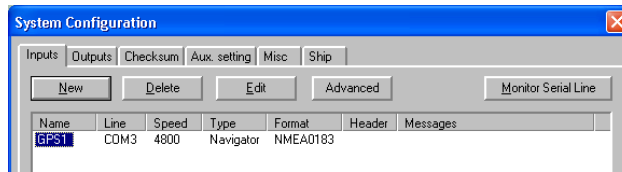
Modifying an input device

A device can be modified by pressing the **Edit** button, or by double-clicking the specific device in the **Inputs** tab in the **System Configuration** dialog. The **Input Config** dialog will be displayed, and parameters modified as described on page 32 onwards.

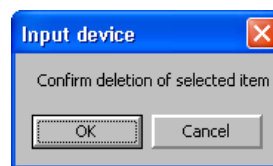


Deleting an input device

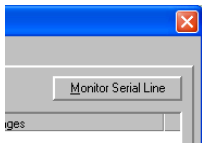
A defined input device is deleted by activating the device in the **Inputs** tab, and then pressing the **Delete** button.



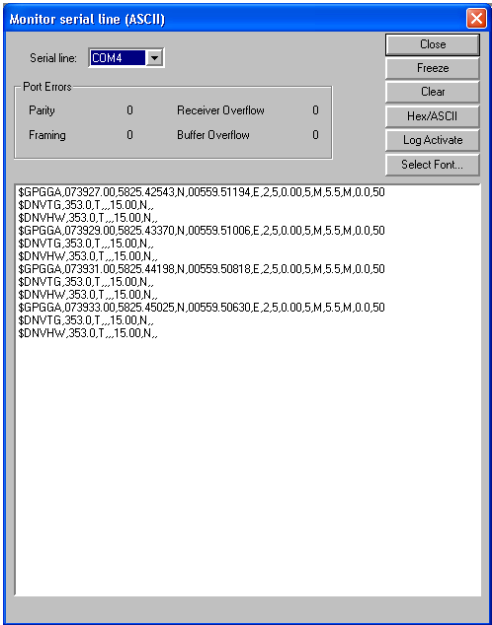
To avoid unintended removal of a device, the selection has to be confirmed by pressing the **OK** button.



Monitoring a serial line



The **Monitor Serial Line** button in the **Input** tab in the **System Configuration** dialog makes it possible to monitor each serial line individually.

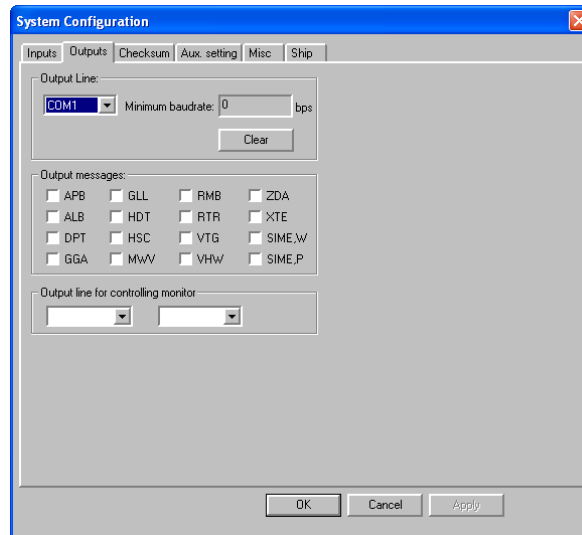


The buttons in the dialog are used as follows:

Close:	Closes the dialog and returns the display to the Inputs tab in the System Configuration dialog.
Freeze:	Stops the text from scrolling.
Clear:	Clears the text field in the dialog.
Hex/ASCII:	Toggles the log data between hexadecimal and ASCII characters.
Log Activate:	Saves the monitored log data to a file. A new dialog for selecting file name and location will be displayed. When logging is activated, the button will change to Log Deactivate . Pressing this button will stop logging data to file.
Select font:	Used for changing font for the text.

3.3 Output configuration

Serial output format are configured from the **Outputs** tab in the **System Configuration** dialog.



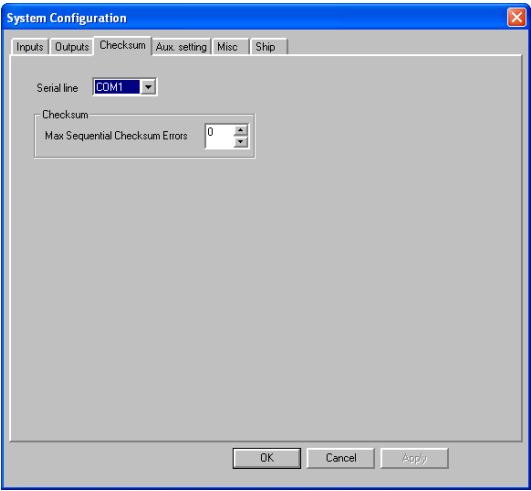
The following fields are available:

Output line	Drop down field for selecting serial output line to be specified.
Minimum baudrate	Value increasing as output messages are selected. <i>Note that this value not should exceed the value set for the input baudrate on the same com. line.</i>
Clear	Clear all selected output message sentences.
Output messages	Available sentences for the output device. The output is NMEA0183 Standard sentences, and at least one of these sentences must be enabled.
Output line for controlling monitor	Used to define which COM port used for the monitors

3.4 Checksum

NMEA data sent to the CS system may contain a checksum. When the CS system receives data with checksum included, it will automatically calculate the checksum and compare this sum with the checksum transmitted by the device.

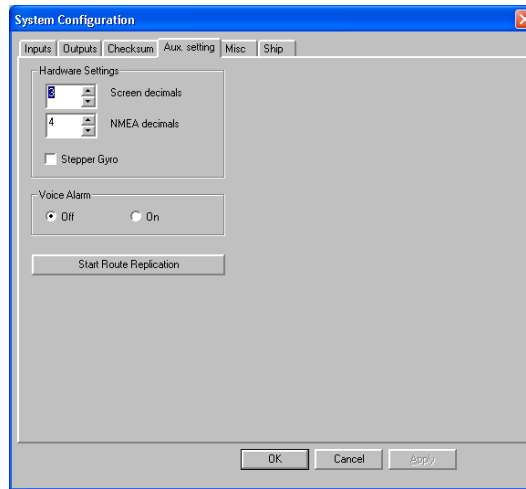
When the calculated and the received checksum not are identical, the settings in the **Checksum** tab in the **System Configuration** dialog will decide whether the CS system will use or reject these data.



Each serial line has its own checksum configuration.

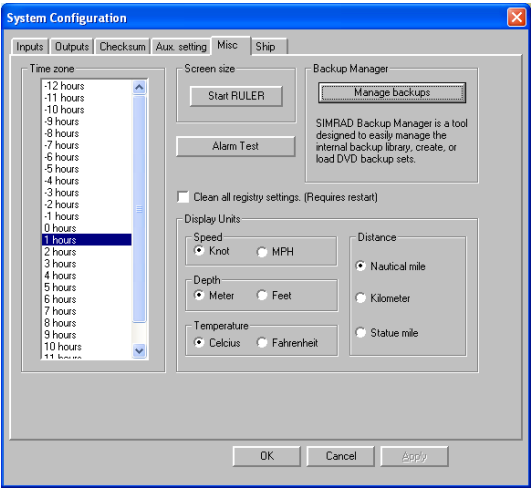
Max Sequential Checksum Errors	Number of sequential checksum errors detected before a checksum alarm will be given.
---------------------------------------	--

3.5 Auxiliary settings



Screen decimals	Number of decimals displayed for the position reference in the Position Window. In the example below, 4 decimals are selected.
NMEA decimals	Number of decimals used in the data output sentences.
Stepper Gyro	Not used.
Voice Alarm	Toggles voice alarm function ON/OFF.
Start Route Replication	Enables route replication between ECDIS and Backup machine in PLECDIS configurations. Routes created on one system will then automatically be copied to the other system.

3.6 Miscellaneous settings



Time Zone	Time zone according to UTC. The system will read the UTC time from the GPS and update it to local time.
Screen size	Used for setting correct diagonal screen size. When pressing the Start RULER button, a new dialog for entering screen size is opened. A dialog box titled 'Calibrate the Screen' with instructions to calibrate the screen for chart presentation. It asks for the screen diagonal dimension in inches, with a text box containing '19'. It includes a 'Measure the Screen...' button and an 'OK' button. Press the Measure the Screen button to open a new dialog used for measuring a selected area directly on the monitor. A dialog box titled 'Measure the Screen' showing a large white rectangle for measurement. Below the rectangle, it says 'Measure dimensions of the white rectangle.' At the bottom, there are input fields for 'Width' and 'Height' (both set to '95') and a 'Units' dropdown menu set to 'Inches'. An 'OK' button is at the bottom. Measure width and height of the white area and enter the values in inches of mm.

Caution

*The Screen size **MUST** be set correctly to display the correct chart scale and to place targets correctly in the chart. If the screen size is wrong AIS target in the outer end of the screen area will be positioned incorrectly.*

After Screen size has been adjusted the chart system must be restarted to synchronize the screen settings.

Alarm Test	By pressing this button, the built in alarm system will issue an alarm for 5 seconds.
Backup Manager	Used for starting the backup manager. Refer the separate CS68 Operator Manual.
Clean all registry settings	Cleans all registry settings when the system is shut down. This will force the system to use default values for all system variables.

Caution

This action will remove all configured devices.

Display units	Units of measurement for speed, depth, temperature and distance.
----------------------	--

3.7 Ship settings

System Configuration

Inputs | Outputs | Checksum | Aux. setting | Misc | **Ship**

Ship name:

Type of ship:

Type of cargo/operation:

MMSI:

IMO:

Call Signal:

Measurements

Diagram showing ship dimensions: LOA (Length Overall), BL (Bow Length), and reference points X ref. and Y ref.

LOA - max length: m

B - max beam: m

HM - mast height: m

BL - bow length: m

Tmax - max draft: m

Ref. point offset - X: m

Ref. point offset - Y: m

Turn radius: NM

Navigation

Crab Factor:

Wheel over time: s

Ship parameters

Max Speed: (Kt)

OK Cancel Apply

Ship name	Parameters used when transmitting AIS information. These fields should be entered correctly to ensure that correct information will be used in the AIS system.
Type of ship	
Type of cargo/operation	
MMSI	
IMO	
Call Signal	Parameters used by the CS system to draw a ship symbol in true size. Used when the actual ship is larger than the minimum ship symbol. <i>Note that the reference offset points are calculated from the vessel's center point.</i>
Measurements	
Turn Radius	
Crab Factor	
Wheel over time	
Max Speed	Used as max value for speed entries.

4 INSTALLATION APPROVAL

This section includes check lists that should be used to verify correct installation of the CS68 system.

4.1 General

When all units are installed, external equipment connected and the software configured according to the previous sections, the installation should be verified according to the check lists in the following pages.

4.2 Check lists

Mechanical installation

Procedure	Ref. page	Y	N	NA	Comment
All units mounted as described:					
MC50 computer	6				
Monitor 1	7				
Monitor 2	7				
FB200 Filterbox	7				
Chart Interface unit	8				
Loudspeaker	8				
Alarm Reset unit	8				
Optional operator panels	9				
Optional External ON/OFF switch	9				
Units properly grounded	10				

Power connection

Procedure	Ref. page	Y	N	NA	Comment
Power connected to MC50	12				
Alarm supply connected to TB9 in Chart Interface unit	12				

Internal cabling

Procedure	Ref. page	Y	N	NA	Comment
Keyboard and mouse connected via splitter cable to PS2 port (J1) on MC50	14				
Monitor cables connected to monitor plug (J4) and to COM9 or COM10 on MC50	14				
Speaker connected to TB13 in Chart Interface unit	Refer cabling diagram, page 77				
Internal cables connected from MC50 to Chart Interface unit:					
Audio Out (J1) on MC50 to TB14 on Chart Interface unit					
TB1 on MC50 to TB16 on Chart Interface unit					
J3 on MC50 to J1 on Chart Interface unit					
Optional external ON/OFF switch connected to TB15 in Chart Interface unit					
Optional operator panels connected to MC50 (and Chart Interface unit)	18				

External equipment

Procedure	Ref. page	Y	N	NA	Baud Rate	Type of equipment / Sentence
External equipment connected to input/output ports in Chart Interface unit:						
TB1 (Serial I/O port)	23					Input:
						Output:
TB2 (Serial I/O port)						Input:
						Output:
TB3 (Serial I/O port)						Input:
						Output:
TB4 (Serial I/O port)						Input:
						Output:
TB5 (Serial I/O port)						Input:
						Output:

Procedure	Ref. page	Y	N	NA	Baud Rate	Type of equipment / Sentence
TB6 (Serial I/O port)	23					Input:
						Output:
TB7 (Serial I/O port)						Input:
						Output:
TB8 (Serial I/O port)						Input:
						Output:
TB10 (Digital input)	24					
TB11 (Digital output)	25					

Software configuration

Procedure	Ref. page	Y	N	NA	Comment
Minimum reference systems configured:					
GPS	32				
GPS datum	33				
GPS Antenna offset	33				
Gyro	32				
Log	32				
Display units selected	41				
Screen size set correctly	40				
Ship information and parameters entered	42				

General check

Procedure	Ref. page	Y	N	NA	Comment
Alarms operational	41				
Time updated correctly from GPS	40				
Keyboard and mouse operative					

System back-up

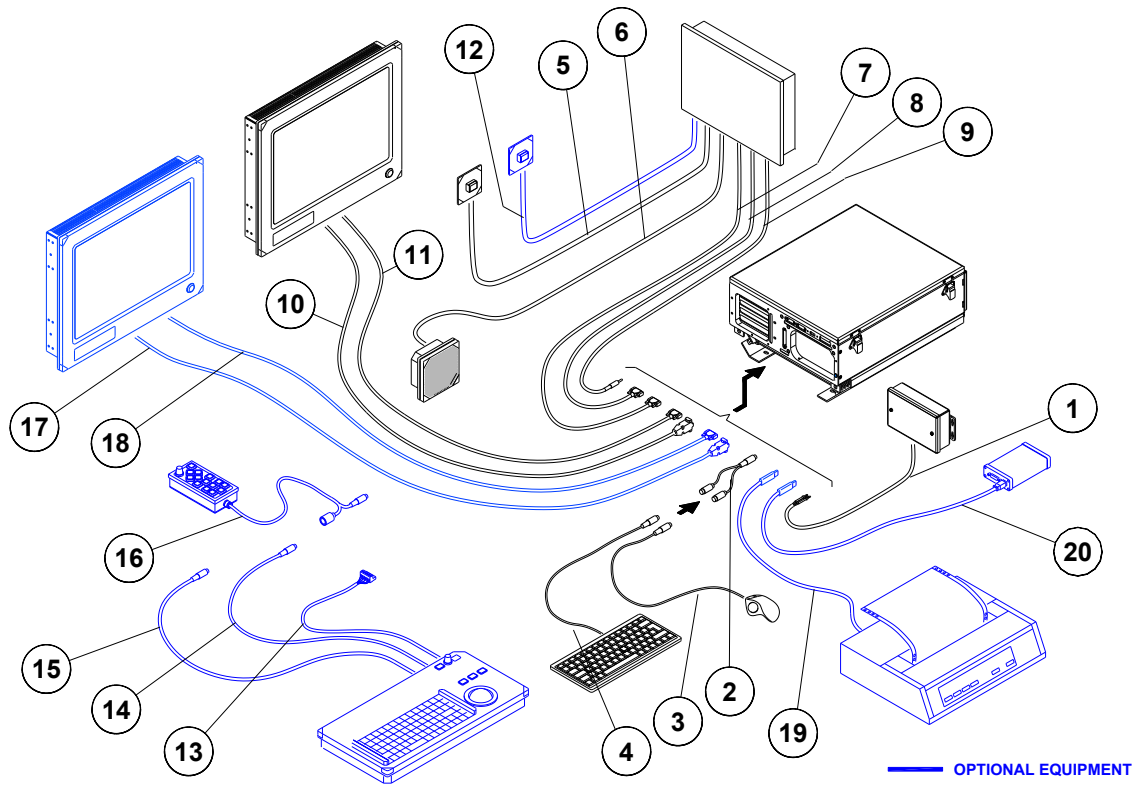
Procedure	Ref. page	Y	N	NA	Comment
Back-up made to Library and burned to DVD after system configuration is completed					Described in the separate CS68 Operator Manual

5 TECHNICAL SPECIFICATIONS

This section lists hardware specification for all units included in the CS68 system.

5.1 Cabling

Cable length for standard and optional units in the CS68 system is shown on the figure below and in the table on next page.



CABLE NO.	CABLE LENGTH	DESCRIPTION	
1	0.45 m	Part of FB200	
2	0.2 m	Splitter cable	
3	1.8 m	Part of TrackMan wheel	
4	1.6 m	Part of Cherry keyboard	
5	5 m	Alarm reset	
6	8.5 m	Part of speaker	
7	1.25 m	(J3 MC50 – J1 Chart Interface unit)	
8	1.25 m	(TB1 MC50 – TB16 Chart Interface unit)	
9	1.3 m	Audio	
10	-	Supplied with monitor (may be delivered by others)	
11	-		
12	5 m	Part of external ON/OFF switch	
13	5.0 m	(System)	Part of COP20/COP30
14	1.5 m	(Keyboard)	
15	1.7 m	(Mouse)	
16	5 m	Part of COP10	
17	-	Supplied with monitor (may be delivered by others)	
18	-		
19		Ordered from printer supplier	
20	TBA	Part of Radar Processor unit	

5.2 MC50 computer unit

Height:	196 mm
Width:	363 mm
Depth:	428 mm
Net weight.....	9.5 Kg
Color:	Black
Environmental Protection:	IP22
Temperature range:	
Operating:	0 to +55 °C (+32 to +131 °F)
Storage:	-15 to +70 °C (+5 to +158 °F)
Dimensional drawing:.....	page 67 onwards.

5.3 Loudspeaker

Height:	110 mm
Width:	110 mm
Depth:	48 mm
Color:	Black
Effect (PMPO):	80 watt max
Frequency range:	20Hz – 80 kHz
Environmental Protection:	IP22
Dimensional drawing:	page 71

5.4 FB200 Filterbox

Height:	50 mm
Width:	177 mm
Depth:	103 mm
Net weight:.....	0.5 Kg
Power:	24V DC
Power consumption	140W
Color:	Black
Environmental Protection:	IP32
Temperature range:	
Operating:	0 to +55 °C (+32 to +131 °F)
Storage:	-15 to +70 °C (+5 to +158 °F)
Dimensional drawing:.....	page 72.

5.5 Chart Interface unit

Height:	280 mm
Width:	312 mm
Depth:	60 mm
Net weight:.....	2.3 Kg
Power:	24V DC
Power consumption	50W
Color:	Black
Environmental Protection:	IP22
Temperature range:	
Operating:	0 to +55 °C (+32 to +131 °F)
Storage:	-15 to +70 °C (+5 to +158 °F)
Dimensional drawing:.....	page 73.

5.6 Cherry keyboard

Height:	130 mm
Width:	280 mm
Depth:	37 mm
Net weight.....	0.5 Kg
Color:	Black
Temperature range:	
Operating:	0 to +55°C (+32 to +131°F)
Storage:	-15 to +70°C (+5 to +158°F)
Dimensional drawing:.....	page 70

5.7 TrackMan wheel

Height:	145 mm
Width:	90 mm
Depth:	58 mm
Net weight:.....	0.2 Kg

5.8 Alarm Reset unit

Height:	72 mm
Width:	72 mm
Depth, including cable bend:	70 mm
Net weight:.....	0.35 Kg
Dimensional drawing:.....	page 74

5.9 COP20/COP30 Operator panel (Option)

Height: 220 mm
Width: 440 mm
Depth: 135 mm incl. cable bend
Net weight.....3.8 Kg
Color: Black
Illumination:..... Adjustable
Environmental Protection: IP56
Temperature range:
 Operating: 0 to +55 °C (+32 to +131 °F)
 Storage: -15 to +70 °C (+5 to +158 °F)
Dimensional drawing:..... page 76.

5.10 COP10 Remote Operator panel (Option)

Height:	144 mm
Width:	72 mm
Depth:	76 mm incl. securing screw
Net weight.....	0.65 Kg
Color:	Black
Enclosure material:	Aluminum
Mounting:	Panel mounted
Environmental Protection:	IP32
Temperature range:	
Operation:	0 to +55 °C (+32 to +131 °F)
Storage:	-15 to +70 °C (+5 to +158 °F)
Dimensional drawing:.....	page 75.

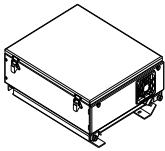
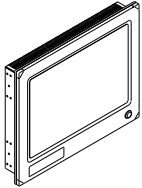
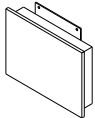
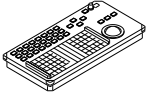
5.11 External ON/OFF switch (Option)

Height:	72 mm
Width:	72 mm
Depth, including cable bend:	70 mm
Net weight:.....	0.35 Kg
Dimensional drawing:.....	page 74

6 SPARE PART LISTING

This section includes part numbers for all standard and optional units that may be included in a CS68 system.

6.1 Main components

PART NUMBER		DESCRIPTION
000-00004-001		MC50 MKII Computer
000-00019-001		JH19T14 MMD (1280*1024 – 60 Hz)
TBA		JH20T17 MMD (1600*1200 – 60 Hz)
TBA		JH23T12 MMD (1600*1200 – 60 Hz)
TBA		JH27T11 MMD (1920*1200 – 60 Hz)
26055046		FB200 Filterbox
26056200		Chart Interface unit
44176022		Cherry keyboard
44169712		TrackMan wheel
26056218		Loudspeaker
26056473		Alarm reset unit
26053231		COP10 Remote operator panel
26053355		COP20 Operator panel
26053207		COP30 Operator panel
26056713		External ON/OFF switch
TBA		Radar Processor unit

6.2 Accessories

PART NUMBER	DESCRIPTION
44142131	Air inlet filter

7 DRAWINGS

This section includes drawings, diagrams and cut-out templates for units in the CS68 system.

7.1 Drawings overview

Parts of the following drawings are enclosed:

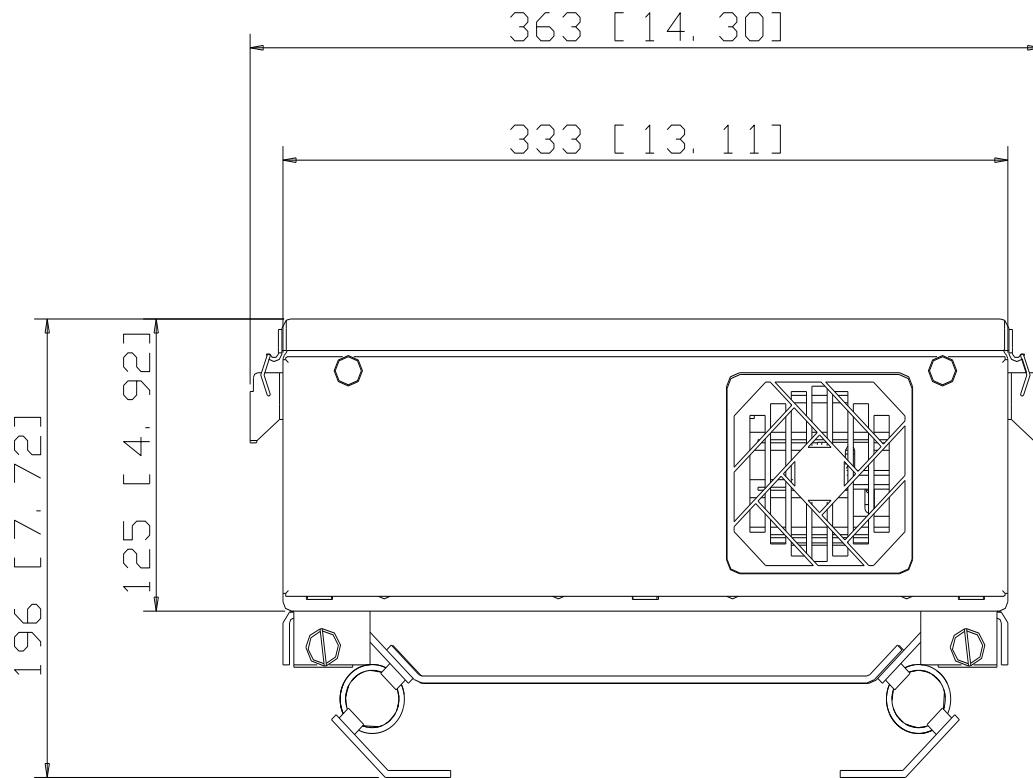
Name	Drw.no	Rev.
MC50 Dimensional drawing (3 pages)	D3-605555	A
- Front view page 67		
- Side view page 68		
- Bottom view page 69		
Cherry keyboard. Dimensional drawing	N4-081309	-
Loudspeaker. Dimensional drawing	N3-605618	A
Chart Interface unit. Dimensional drawing	N1-605617	A
Alarm Reset unit / External ON/OFF switch. Dimensional drawing	D4-605650	A
FB200, dimensional drawing	D3-604913	A
COP10 (OPTION). Dimensional drawing	N3-605303	A
COP20/COP30 (OPTION). Dimensional drawing	N1-605304	A
CS68 Chart system, Cabling diagram	N3-605644	C
Computer interface board, component layout	N4-605514	D
Loudspeaker, Panel cut-out	N4-605619	A
Alarm Reset unit / External ON/OFF switch. Panel cut-out	D4-605650	A
COP10, Panel cut-out	N3-605303	A
COP20/30, Panel cut-out	N1-605304	A

Note

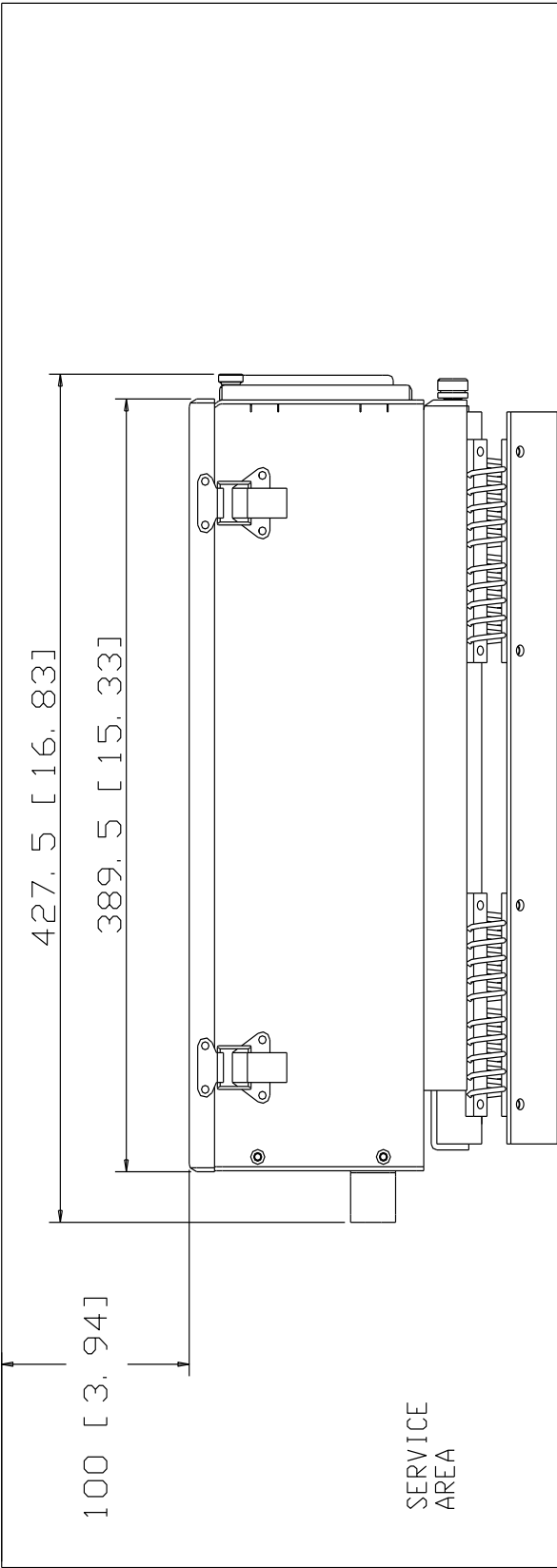
The original signed drawings are recorded at Navico Egersund.

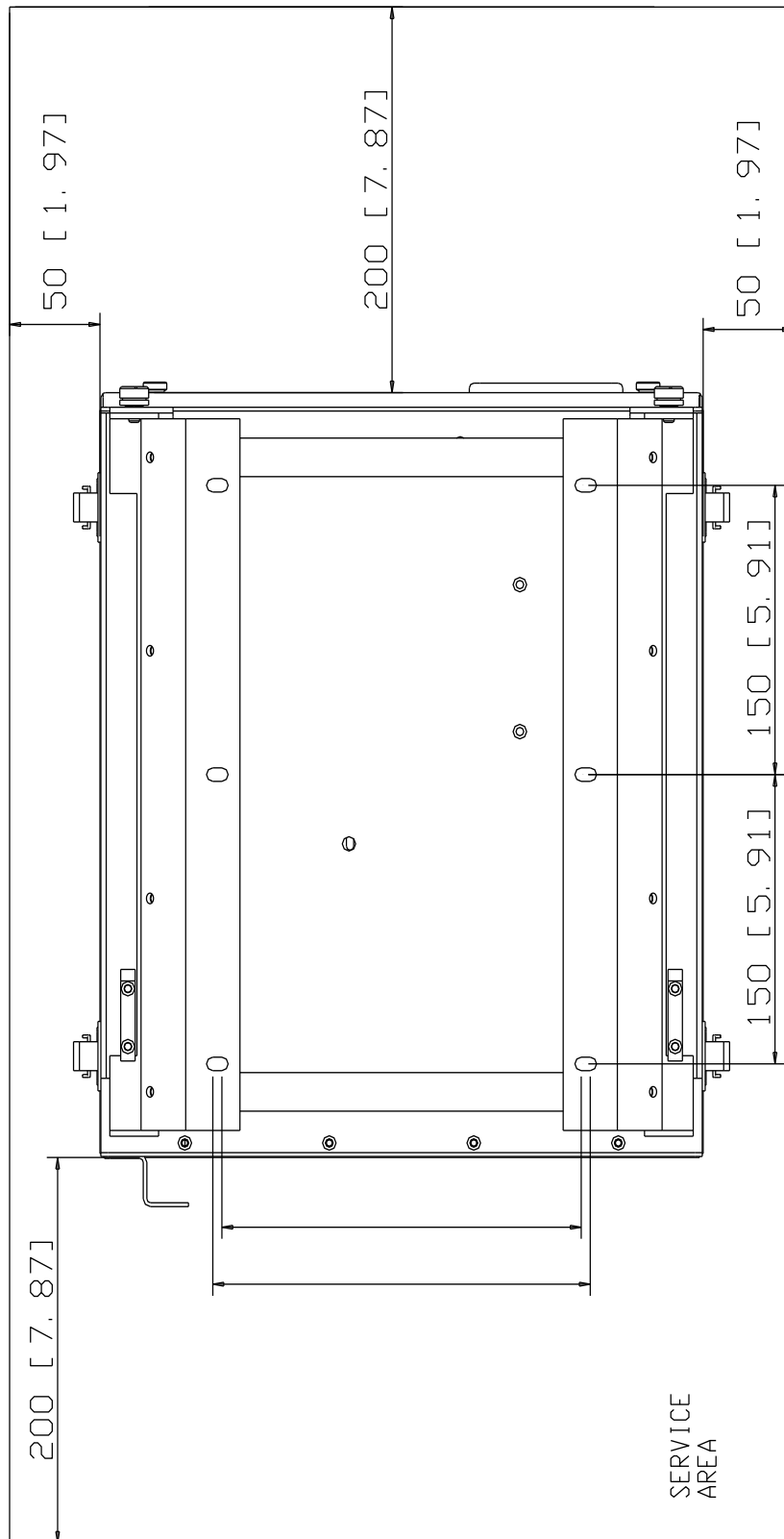
7.2 MC50 Marine Computer

Front view

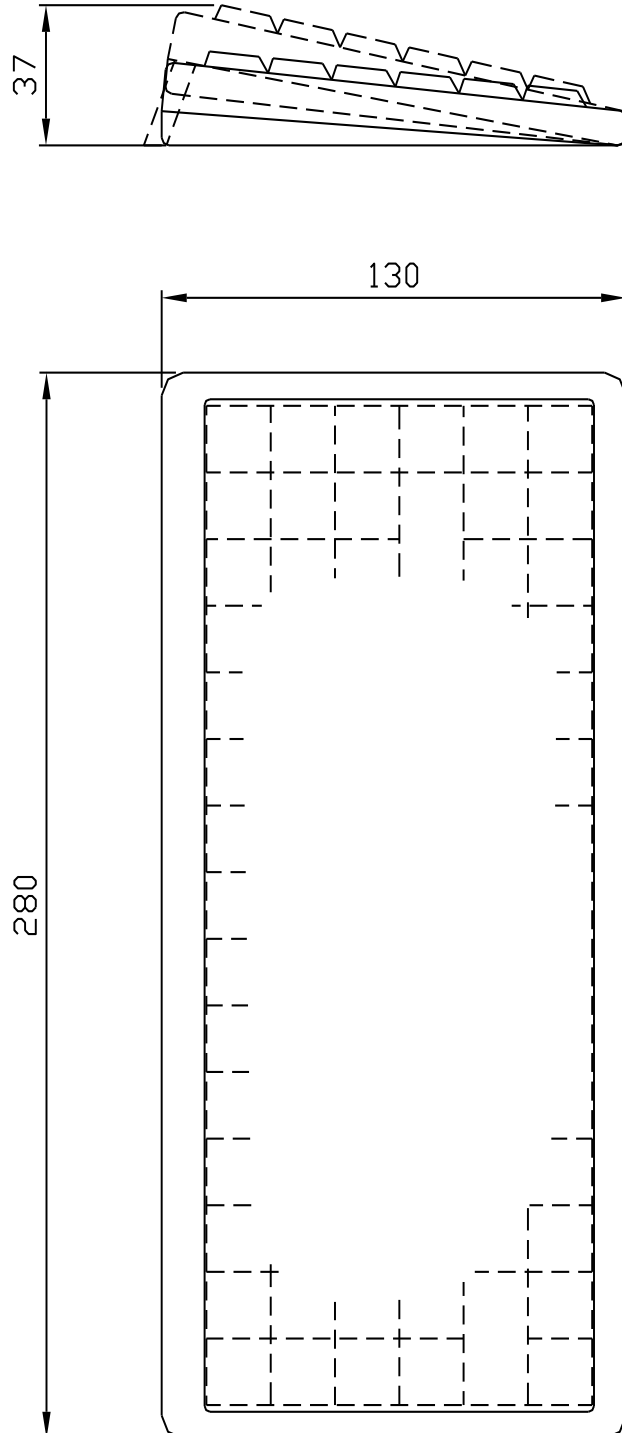


Side view

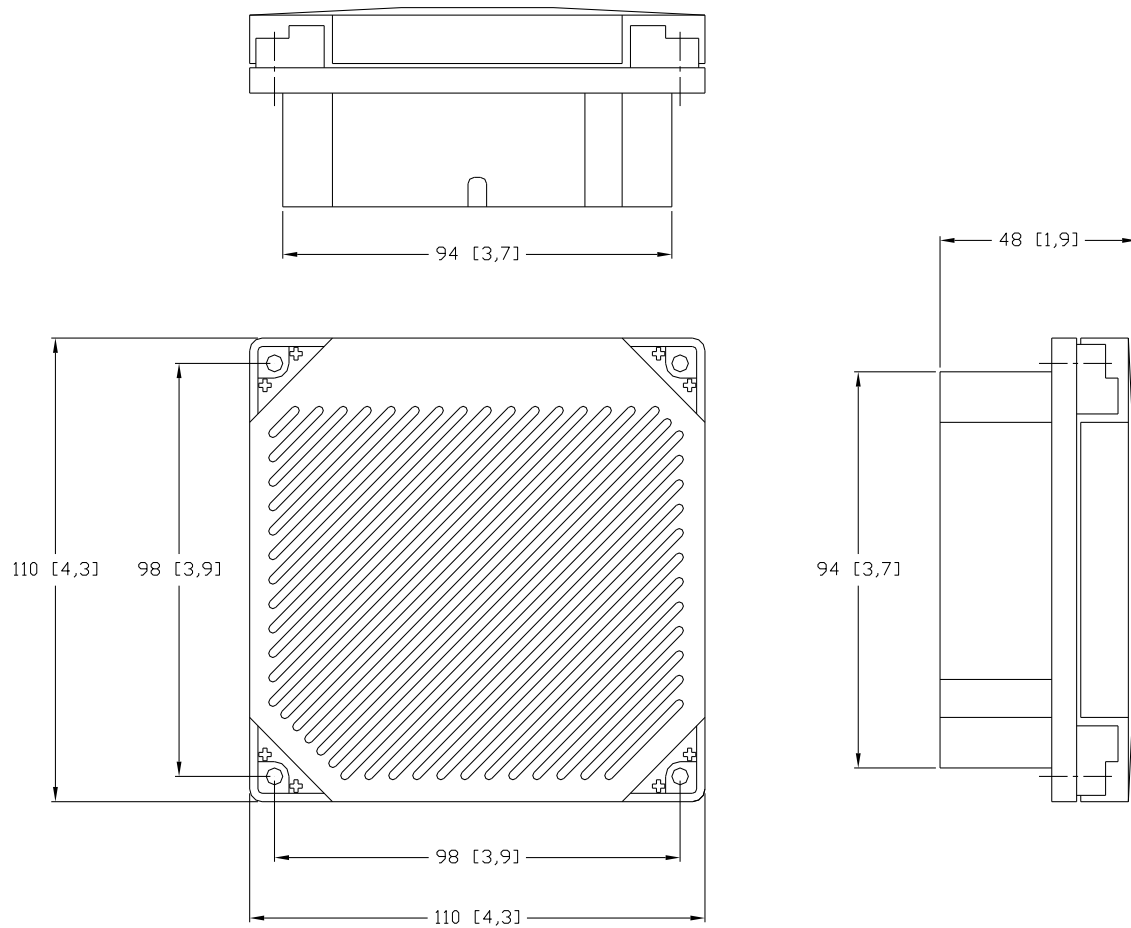


Bottom view

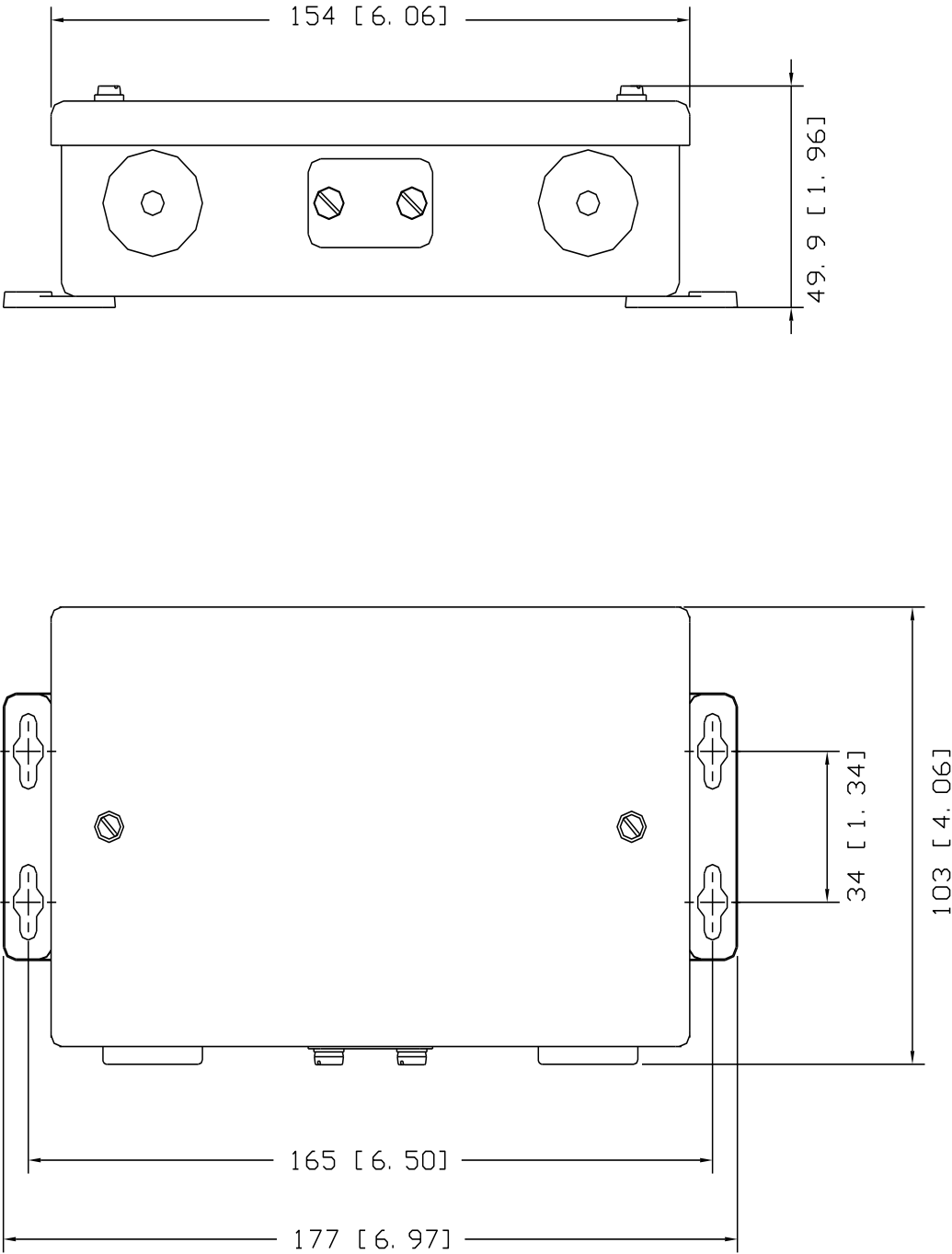
7.3 Cherry keyboard



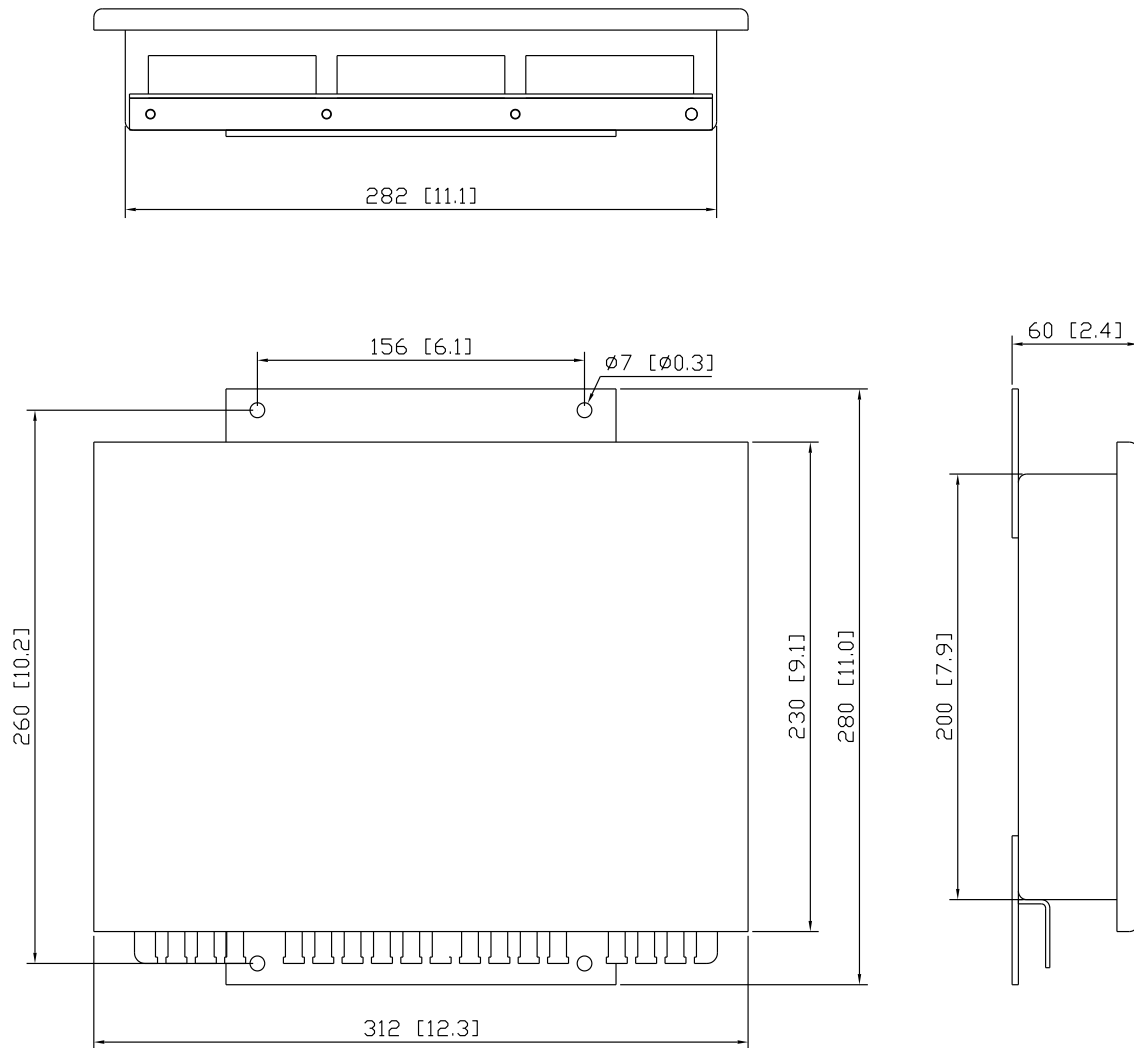
7.4 Loudspeaker



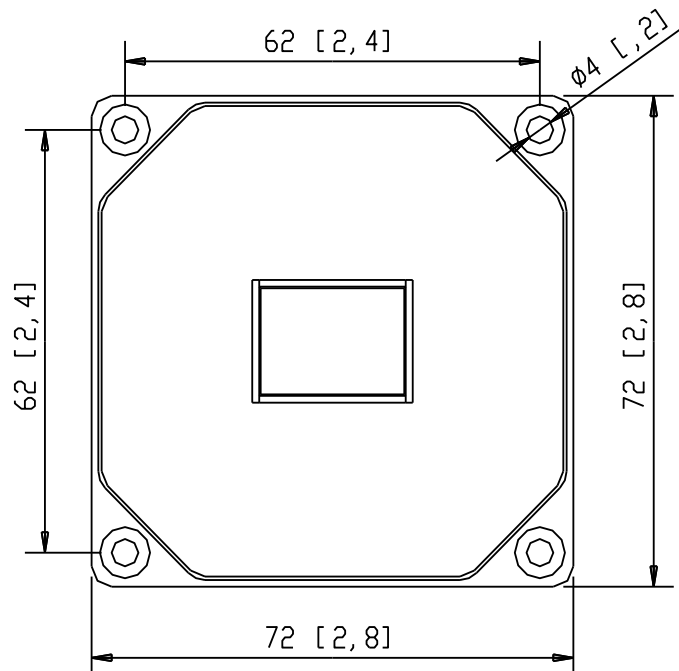
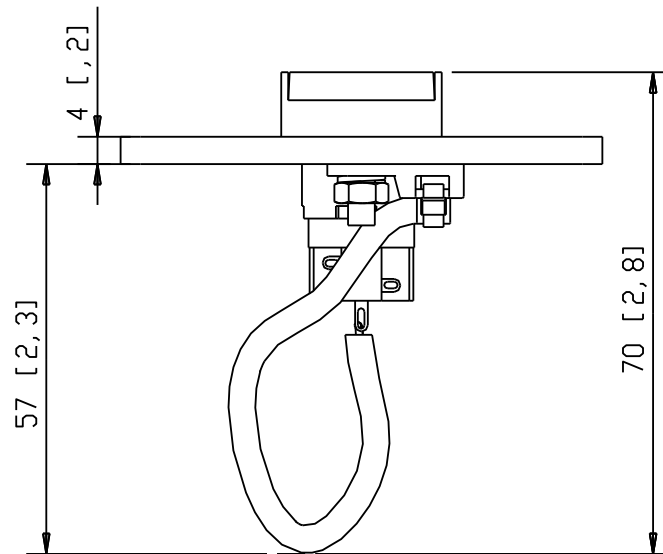
7.5 FB200 Filter box



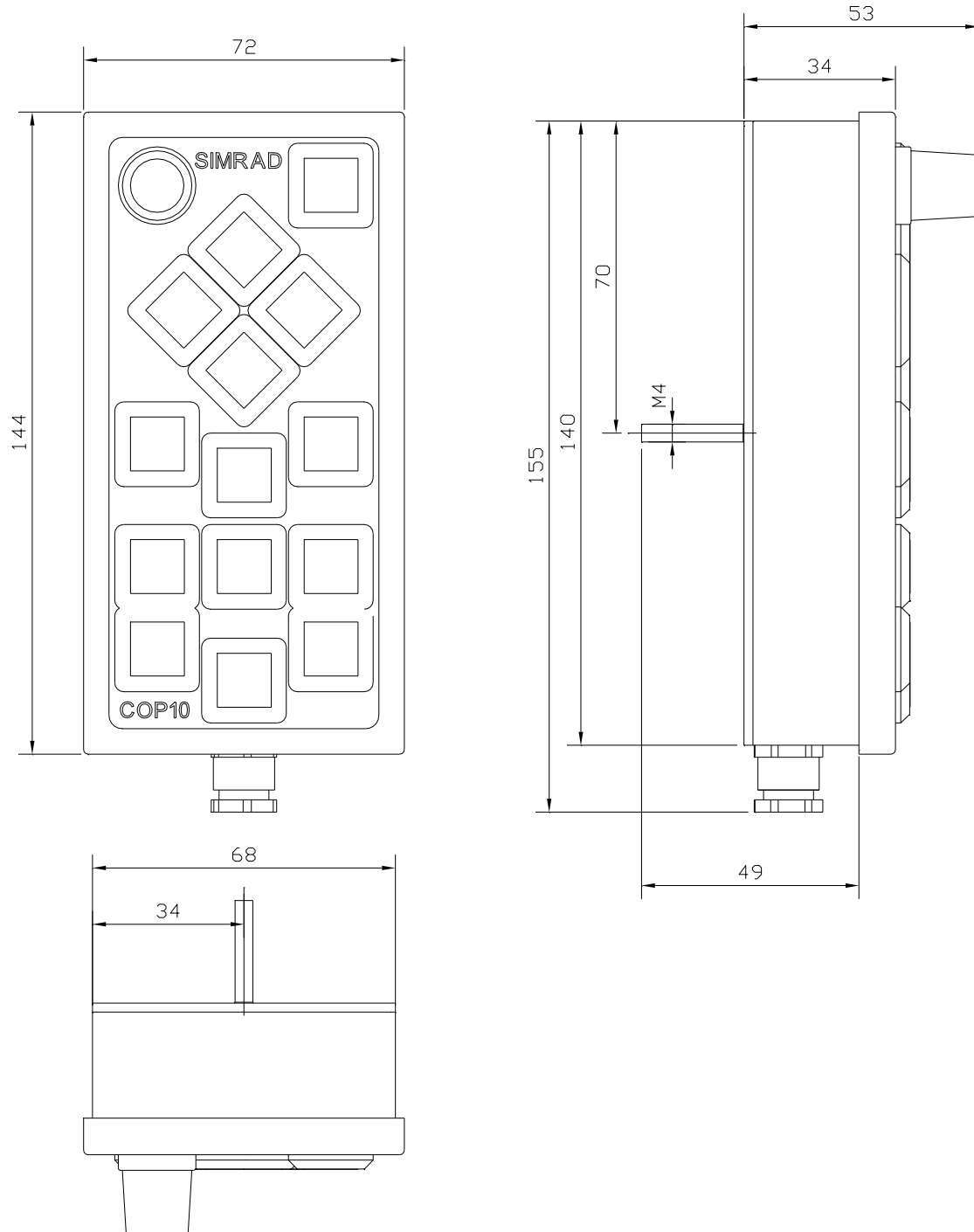
7.6 Chart Interface unit



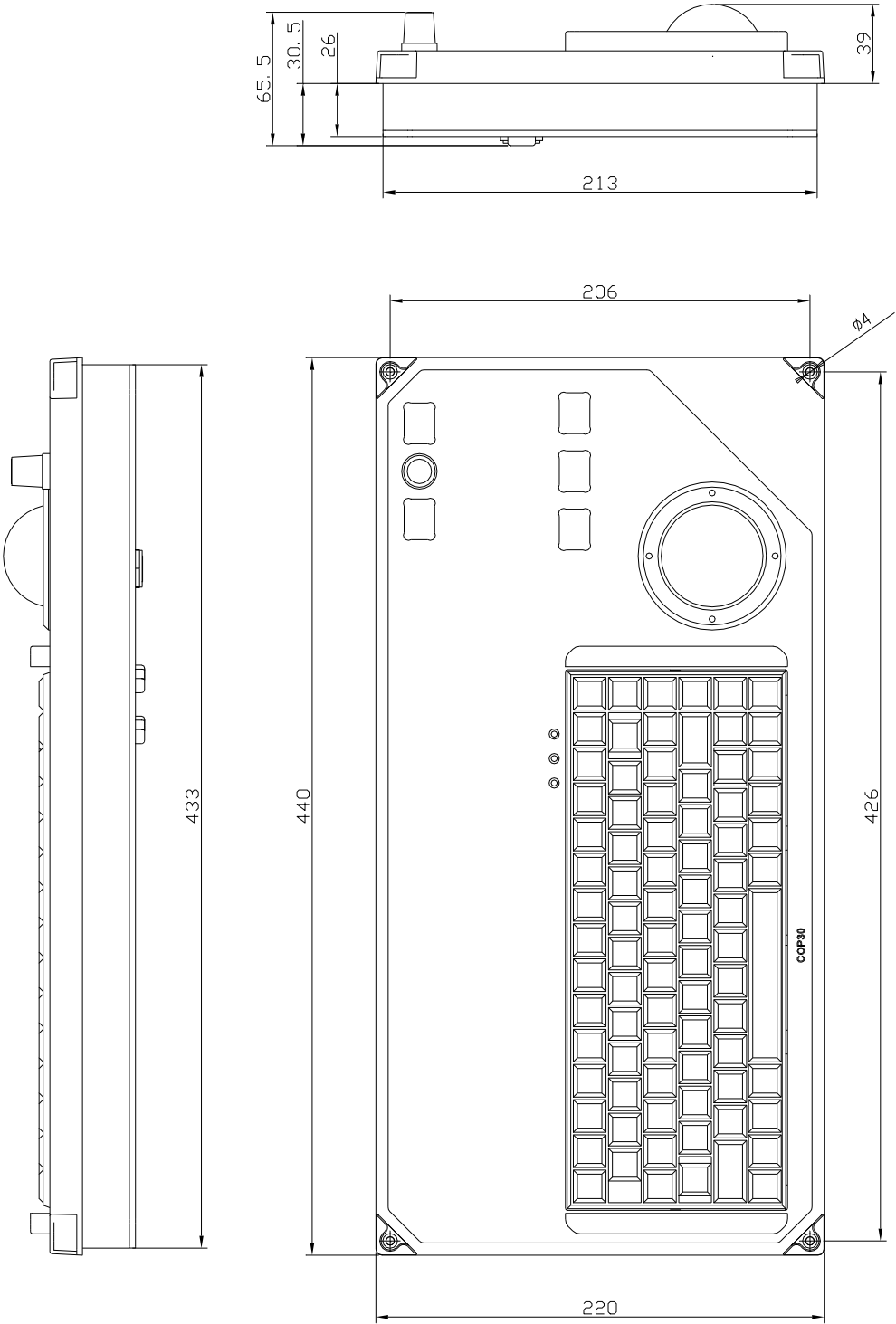
7.7 Alarm Reset unit / External ON/OFF switch



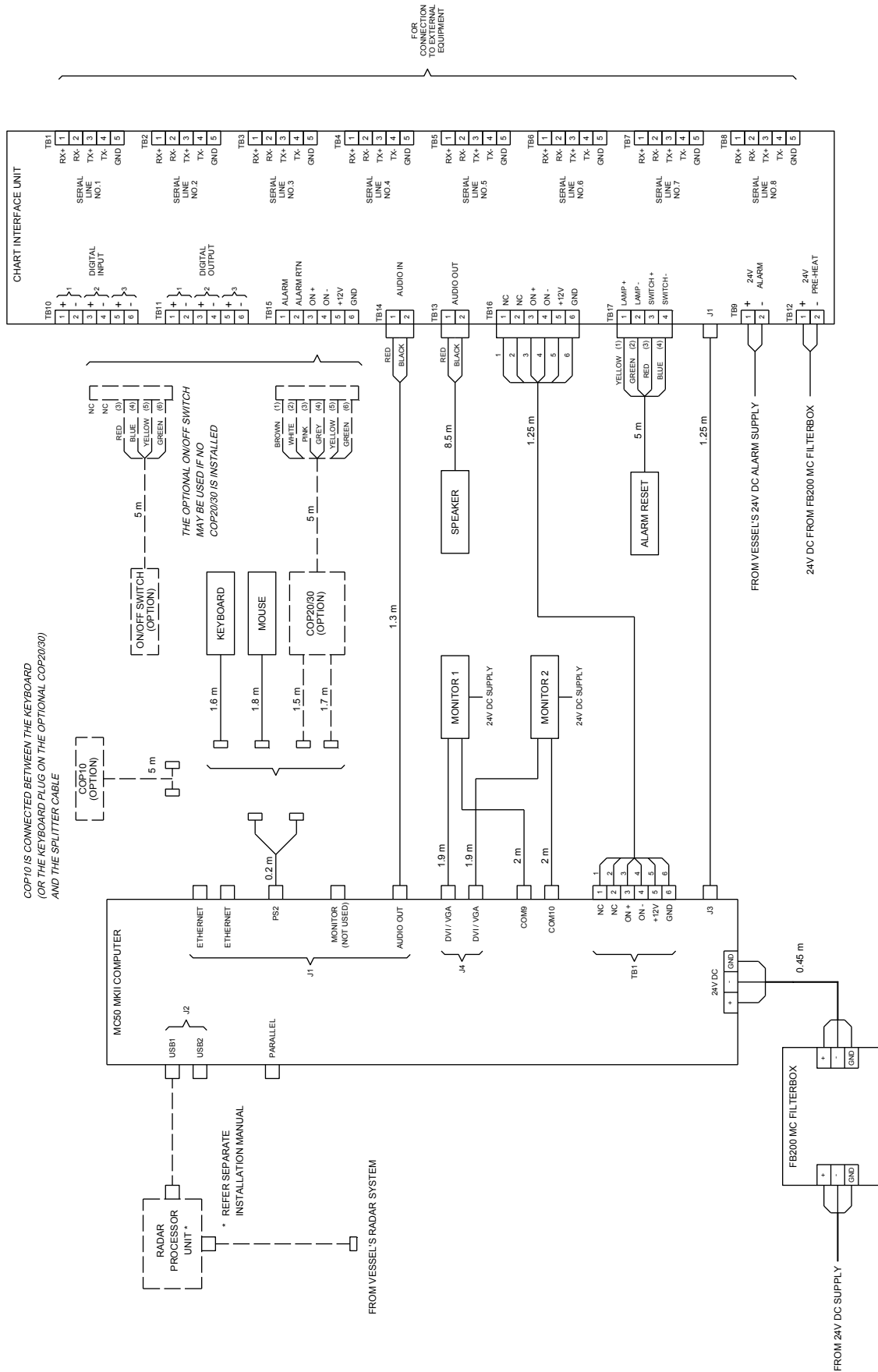
7.8 COP10 (Option)



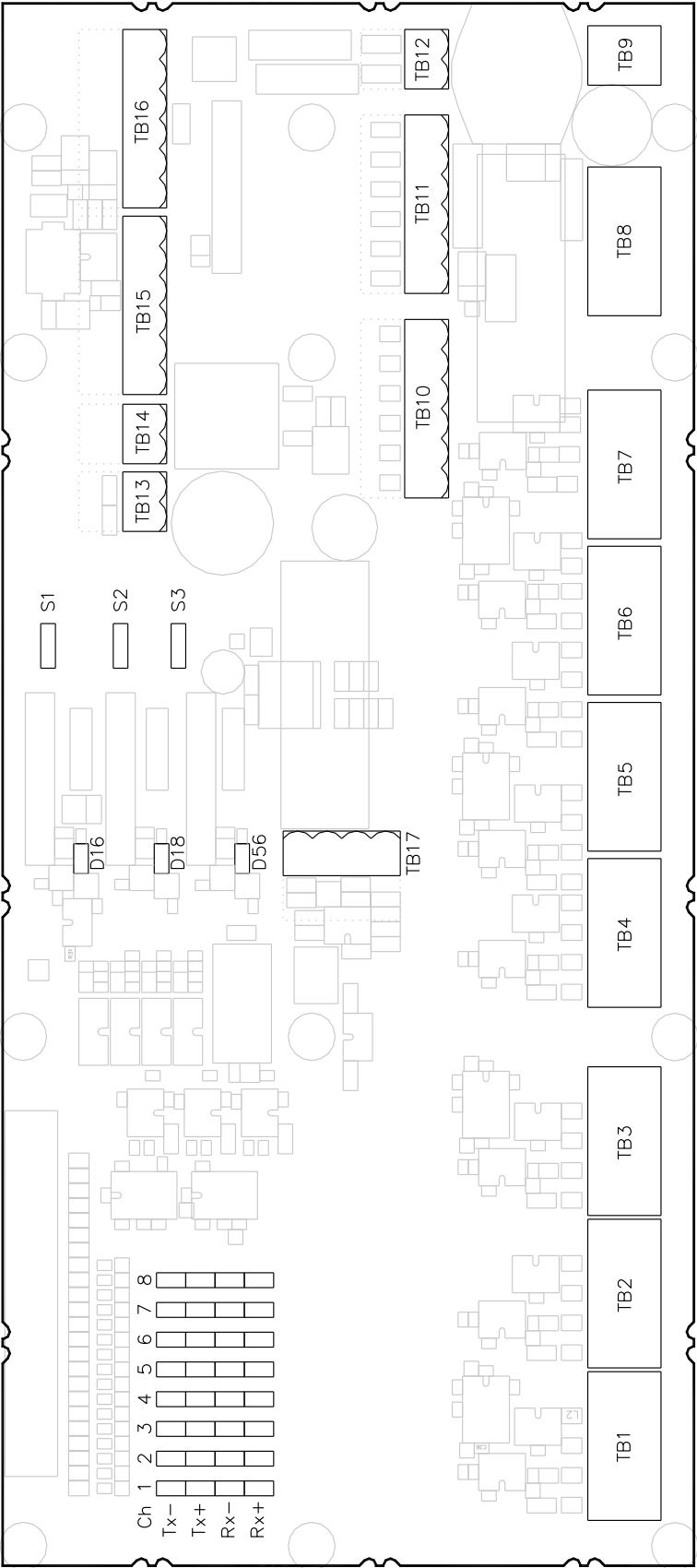
7.9 COP20/COP30 (OPTION)



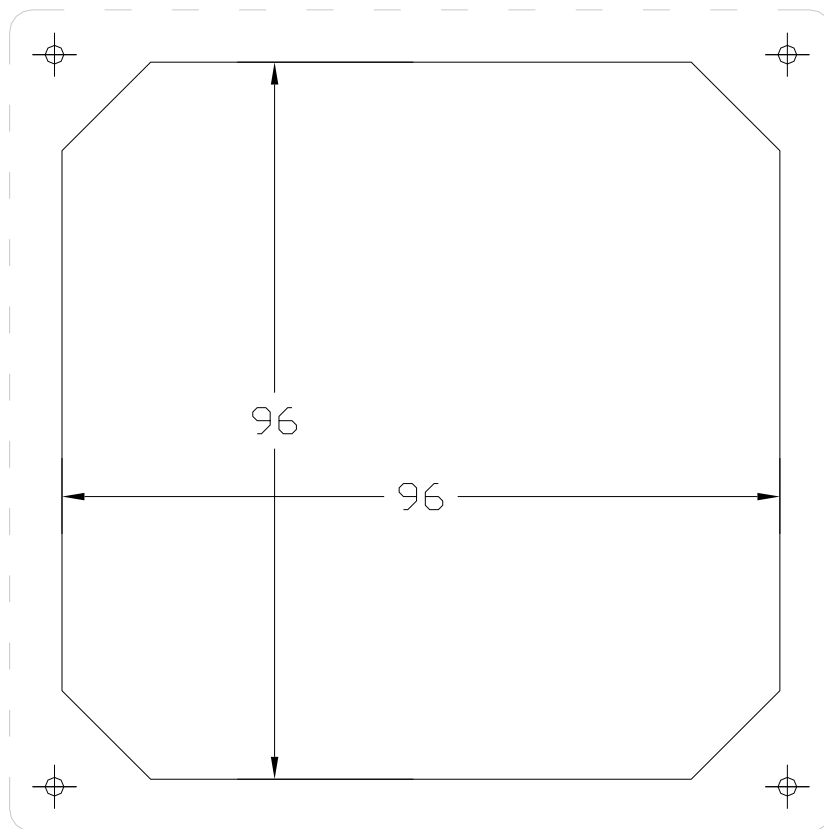
7.10 CS68 ECDIS, Cabling diagram



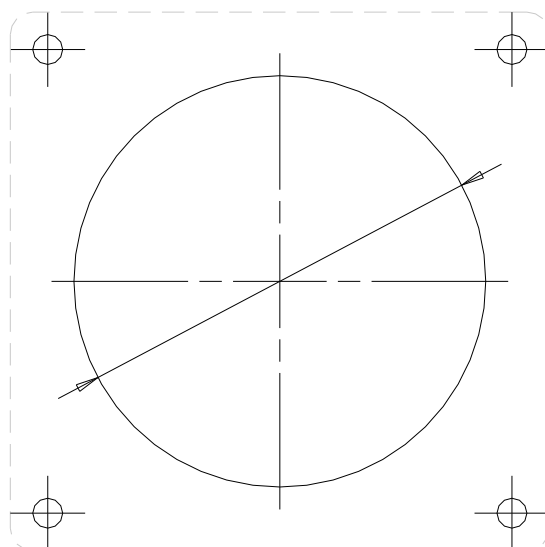
7.11 Computer interface board, Component layout



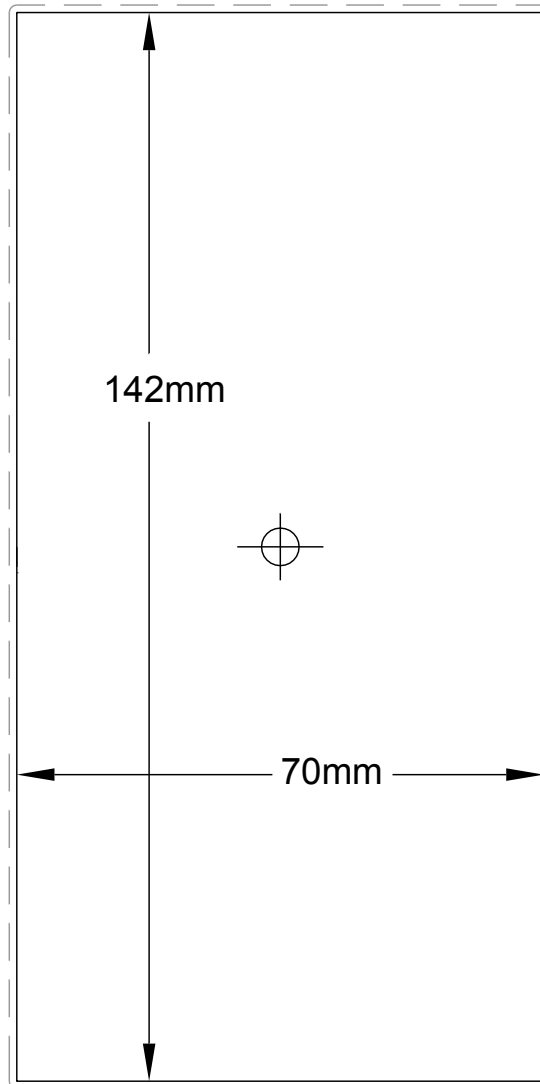
7.12 Loudspeaker, Panel cut-out



7.13 Alarm Reset unit / External ON/OFF switch, Panel cut-out



7.14 COP10, Panel cut-out



7.15 COP20/COP30, Panel cut-out

